ECN-82-01

A Model of the Employment, Trade and Tax Ramifications of the Provincial Highways Spending Program (MIES 3)

Ontario

Ministry of Transportation and Communications

Research and Development Branch

Provincial Highways Program
Capital Programs Branch

ECN-82-01

A Model of the Employment, Trade and Tax Ramifications of the Provincial Highways Spending Program (MIES 3)

R. Slocum
Senior Research Officer
Research and Development Branch

Published jointly by :

Provincial Highways Program, Capital Programs Branch and
Research and Development Branch
Ontario Ministry of Transportation and Communications
Hon. James W. Snow, Minister
H.F. Gilbert, Deputy Minister

Published without prejudice
as to the application of the findings.
Crown copyright reserved; however, this
document may be reproduced for non-commercial
purposes with attribution to the Ministry.

For additional copies write:
The Editor
Research and Development Branch
Ministry of Transportation and Communications
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8
December 1982

ACKNOWLEDGEMENTS

The successful completion of MIES 3 is due to the efforts of a number of highly qualified professionals:

- Professors T. Kuhn and N. Biger, and S. Levin of York University for the development of MIES 1 and 2.

- Ontario Road Builders Association and selected contractors for their cooperation in supplying initial cost data.

- The MIES Working Committee for their consistent review and input to the model development.
  - J. Lucey, Chairman
  - O. Maier, Secretary
  - S. Edwards
  - J. Thompson
  - F. Walshe
  - R. Slocum

- A. Snider of the Estimating Office for the retrieval and interpretation of representative contract cost data.

- P. Mok and R. Fernandes of Computer Services Branch for their thorough and speedy development of the computer program.

- C. Gaston and M. Bedard of Statistics Canada for the provision of interprovincial I-O data.

FOREWORD

This report documents the results and status of Phase 3 of the Micro-economic Impact Evaluation System (MIES) Study as carried out by the Capital Programs Branch and the Research and Development Branch in conjunction with a working sub-committee of the Provincial Highways Program Planning Committee.

The thrust of the exercise was directed toward calibrating and implementing the initial MIES model to make it relevant to Ontario application and more specifically for use in the Provincial Highways Program. Originally developed by the R & D Branch, its refinement and implementation, made possible through the Working Sub-Committee, has put the model on stream for use in policy analysis.

The Highway Capital Planning Office in the Capital Programs Branch will be responsible for maintaining the model which is based with the MTC computer facilities and for keeping it current.

Enquiries regarding the model's capabilities and requests for outputs should be directed to the Manager, Capital Program Planning Office, Capital Programs Branch.

J. F. Lucey, Chairman
MIES 3 Sub-Committee

ABSTRACT

The essential character of the Micro-economic Impact Evaluation System is its ability to provide reliable, rapid information on the economic impact of the Provincial Highways Program's capital spending. The MIES 3 process is illustrated schematically in Figure 1. Utilizing contract cost data, work-type templates were created that provide cost breakdowns by material, labour, profit, overhead, and equipment. These data are then combined with Statistics Canada input-output data for Ontario to produce economic indicators, namely industrial production, employment, foreign imports and provincial tax revenues.

The MIES 3 Model provides capital planners and senior policy-makers with a useful operational tool for gauging the impacts of highway capital expenditure on Ontario's and Canada's industrial economics.

1/ INTRODUCTION

Always sensitive to the well-being of its citizens, the Ontario Government carefully weighs decisions with both eyes on economic impact. As a tool for decision-making, a model has been developed that estimates key economic impacts from the Ministry's major spending area: provincial highways expansion and rehabilitation.

The report deals with the third phase of the Micro-economic* Impact Evaluation System project (MIES 3). The first two phases are reported in "Micro Impact Evaluation System: A New Methodology for Evaluation of Public Projects" by Biger, Kuhn and Levin, MTC, 1981.

This third phase addresses three objectives:

- to build the model around Ontario input-output (I-O) data,
- to develop a comprehensive set of construction cost templates for the different work types that represent the Provincial Highways Program, and
- to see the model implemented as part of the Provincial Highways Marketing Program decision-making process.

Chapter 2 describes the MIES Phase 3 application of the model. Detailed model input data are presented in Chapter 3 and in Appendix A, followed by the output results including indicator definitions in Chapter 4. Chapter 5 discusses applications. The report concludes with suggestions for further applications.

---

*"Micro-economic" is used here rather than "macro" because the impacts are broken down by industrial sector (up to 191 sectors can be displayed).

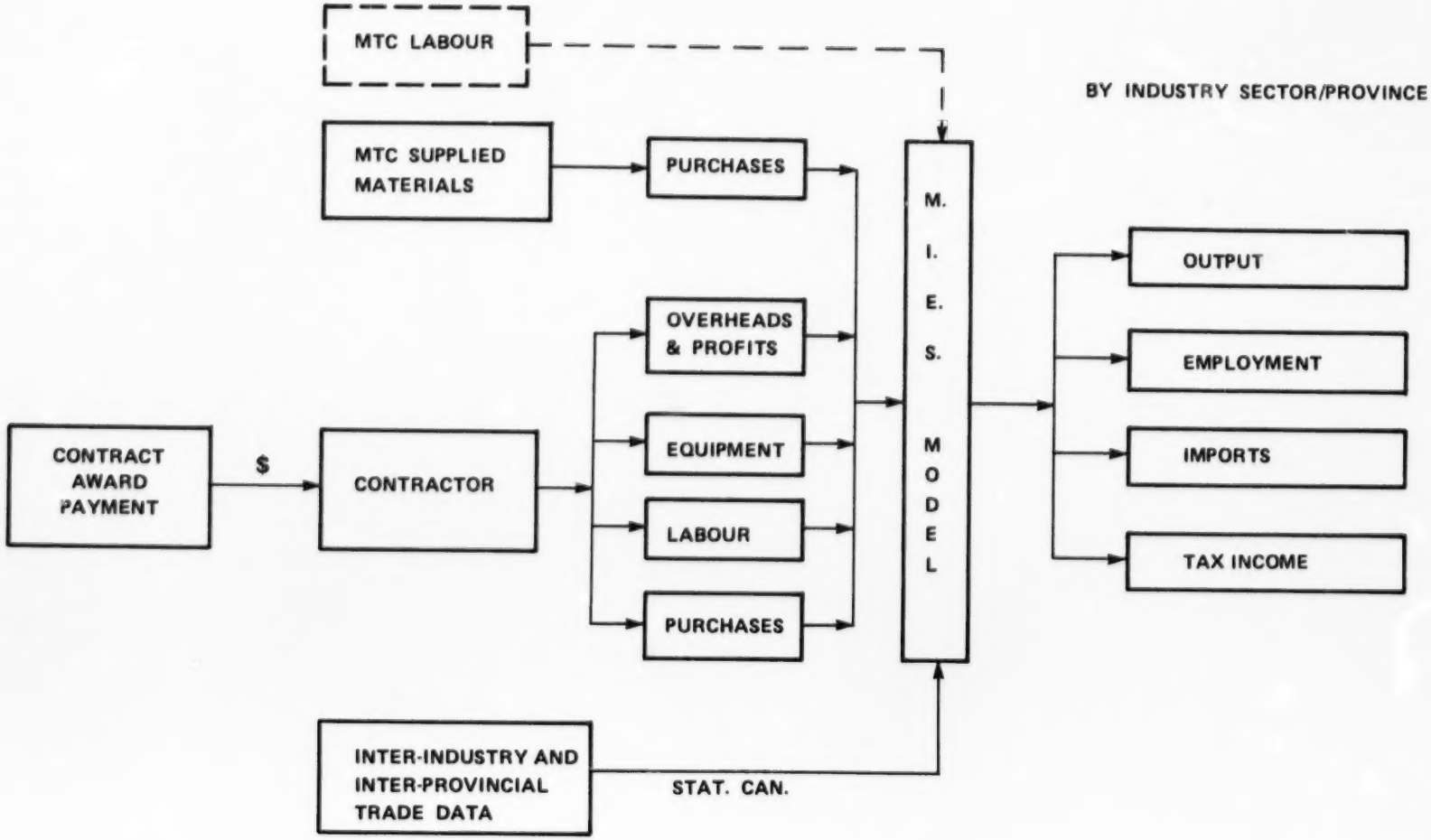


Figure 1/ M. I. E. S. Flow Chart

2/ THE MIES 3 MODEL

The MIES 3 Model (see Figure 1) is an inter-provinicial, input-output model that calculates the economic effects of Ontario's spending on highway construction.

By inputting data on the nature and amount of spending, the model can trace the inter-industry and inter-provincial flows that result. These flows are quantified by industry/province as:

- employment
- gross production
- foreign imports
- Ontario tax revenue

The MIES 3 Model improves on the earlier models by incorporating Ontario input-output matrix data from Statistics Canada, and by quantifying the induced impacts resulting from household spending of earned income. The latter represents the positive impacts on consumer industry sales (milk, movies, air travel, TV sets, cars, etc.) that result from the direct, indirect and induced wage incomes derived from highway construction.

The reader must be cautioned about the time lag of the input-output data provided by Statistics Canada. The MIES 3 Model utilizes 1974 I-O data; hence, the economic structure of 1974 is reflected in the model's figures for indirect and induced industrial production and employment*. The next input-output data update by Statistics Canada will be made in 1983 to the figures for the year 1979. This lag in reflecting the most up-to-date industrial relationships may tend to bias the economic indicator figures for particular industries, but total impact figures will be affected to a lesser degree. The model output is valid for assessing the relative impacts of capital investment options.

---

*Changes in input-output relationships between industries can result from changing demand, technology, regulation, exchange rates and relative prices of substitutes.

The MIES 3 Model goes through the following steps to provide the user with the above economic indicators:

- The project work type is specified and the cost breakdown entered as shown on the pie charts (see Appendix A).
- Materials cost is classified by Statistics Canada commodity code.
- The model then calculates, through the I-O data base, the economic indicator values.
- Tax revenues are estimated based on the effective average provincial income and sales tax rates for businesses and individuals, using the sales and income figures produced by the I-O calculations.

The computer program allows the user to operate the model in TSO-TSO, TSO-BATCH and BATCH-BATCH*. A separate documentation of the program is available from the Computer Services Branch.

---

*These terms refer to terminal contact (TSO) and punch card/high-speed printer mode (BATCH).

3/ MODEL INPUTS

The client for the model's output, the Provincial Highways Planning Committee, specified the work types that were representative of the Provincial Highways Program.

The work types were then costed by review of representative contracts and average cost components as set down on the pie charts shown in Appendix A. These charts should be reviewed on an annual basis by the Estimating Office to ensure that the labour share and the commodities used are still representative.

4/ CONSTRUCTION WORK TYPES

The charts in Appendix A illustrate the variation in cost breakdown by construction work type.

The commodities used in a project (materials purchased by the contractor, asphalt cement supplied by the Ministry, gasoline and diesel fuel, and parts for equipment repair) are fed into the I-O data base of the model. The commodity codes used by Statistics Canada are in Table 1.

Wage incomes for equipment repair are estimated at 40% of the cost. The wage rates used for calculating direct employment were taken from the Fair Wage Schedule provided by the Ministry's Estimating Office.

Table 1/ Main Commodity Files

Commodity Item and Title

017	Nursery Stock, Related Material
025	Poles, Pit Props, Fence-Posts, etc.
049	Sand and Gravel
131	Rubber
050	Stone, Crude
135	Plastic Sheets, Film, Basic Shapes, Nes.
138	Plastics
191	Lumber and Timber
197	Fabricated Wood for Structures
239	Steel Bars and Rods
245	Coal Tar
250	Steel Pipes and Tubes
251	Iron Castings
263	Slag
264	Aluminum and Alloys Formed
265	Copper, Cast, Rolled, or Extruded
276	Structural Steel Incl. Fabricated
278	Pre-Fabricated Structures, Metal
281	Culvert Pipe, Corrugated Metal
283	Pipes, Siding, Sheet Metal Worl, Nes.
287	Post-Tension Ca[illegible]s
288	Wire Fencing, Screening, Netting
366	Automotive Parts
368	Electrical Equipment Nes.
370	Wire and Cable, Insulated
372	Electrical Conduit, Switches, Devices
374	Electrical Lighting Fixtures
377	Concrete Basic Products
379	Ready-Mix Concrete
380	Bricks and Tiles, Clay
393	Abrasive Basic Products
395	Gasoline, Diesel
402	(Asphalt Cement) Feedstocks, etc.
425	Calcium Chloride
470	Synthetic Rubber
475	Explosives
525	Road Highway Construction
533	Water Transport
546	Electric Power
577	Rental of Trucks
579	Equipment Rental

5/ THE MODEL OUTPUT

For a particular project or sub-program, the model generates the numbers for employment, imports and tax revenues. The indicators are defined in Section 5.1.

5.1/ Economic Indicator Definitions

Direct Private Sector Employment: - Labour time in person-years required to construct the road/structure. This is a highly relevant indicator, particularly in periods of high unemployment.

Indirect Private Sector Employment: - Labour time in person-years required to produce the materials used in the construction of the road/ structure.

Induced Private Sector Employment: - Labour time in person-years required to produce the goods and services purchased by households using income earned in "direct" and "indirect" employment (above). For example, purchases of food, travel, appliances, etc.

Project Supervision Employment: - MTC and for private sector labour time in field supervision of highway construction projects.

Industrial Gross Production: - The gross sales value of production generated by the work project/sub-program. This measure of economic activity should be viewed with caution since it contains some "double counting" of production.*

Foreign: - The value of materials production purchased outside Canada. A low import figure is desirable in view of our large balance of payments deficit.

---

*There is not necessarily a net increase in GNP (gross national product).

Tax Revenues: - The value of tax revenues (personal income tax, corporate tax and retail sales tax) returning to the Ontario government. This revenue reduces the actual cost to government.

5.2/ Impacts of $1 000 000 Expenditure

The Tables in Appendix 'B' illustrate the impacts of $1 000 000 in spending on the various work types. These figures are the building blocks for evaluating the sub-programs of the Provincial Highways Program, namely system expansion and system rehabilitation.

5.3/ Sample Applications

The figures shown in Tables 4 and 5 illustrate the results of applying the economic analysis to the 1982 Provincial Highways Program (MTC and MNA).

Looking at the economic impact in specific industries, several major industries stand out, as shown in Tables 7 and 8. The impact on employment in other provinces is also shown, the major impact being in Quebec and Alberta.

6/ APPLICATIONS OF THE MIES MODEL

The primary benefits of this Ministry's construction and maintenance activities accrue to the road user. These benefits have been assessed in the past using cost/benefit analyses which contribute to the decision-making process. The Micro Impact Evaluation System tracks the spending effects of highway projects on the economy through the various contracting layers and out to the rest of the economy. Especially during periods of slack economic activity, it becomes important for decision-makers to include the spending effects of projects/programs on the economy in the decision-contributing spectrum.

This application of the MIES can be twofold, as explained in Sections 6.1 and 6.2.

6.1/ Transportation Investment Trade-Offs

Consideration of economic factors is becoming increasingly important in decision-making. MIES is a useful tool to illustrate and quantify the effects especially where large scale spending options are being evaluated. It appears that MIES indicators can be used most effectively for system expansion project/programs which tend to be justified to a greater degree from an economic viewpoint right from their inception. While most single projects are not of sufficient size, some very capital-intensive single undertakings can be effectively assessed (e.g., twinning of the Burlington Skyway Bridge), to a certain extent in terms of overall economic impact and, more definitely and specifically, one alternative versus another, such as the effect on the steel industry of a steel structure as opposed to a post-tensioned concrete bridge.

6.2/ Program Value

The MIES indicators enable the evaluator to demonstrate expected indirect program effects associated with transportation expenditure. Such information is essential when describing the program's economic value to the public and to central agencies.

From time to time, specific allocations are made by Management Board for Job Creation purposes. Use of the MIES employment indicators provides a sound basis for determining direct, indirect and induced employment and identification of the economic sector where it occurs.

7/ CONCLUSIONS

The objectives of MIES 3 have now been met. The Model incorporates an economic impact routine which is operational and utilizes MTC base data and Ontario Input/Output data. This report represents the successful completion of three years of rather intensive effort to establish a credible base against which to assess the economic impacts of the Provincial Highways Program.

The MIES 3 Model is inexpensive to operate ($3 per work-type run) with immediate turn-around time. The matrix output is easily understood and the figures are reliable.

The model has already effectively demonstrated the employment benefits of the 1982 BILD Job Creation Allocation, and will have increasing application in assessing future economic benefits from transportation spending.

The MIES 3 type model shows promise in application to other expenditure areas, as it can be expanded also to include pre-contract engineering and maintenance functions.

The general model of MIES can be applied to other capital spending programs of the government.

APPENDIX A/ PIE CHARTS OF INPUT COMPONENTS BY WORK TYPE

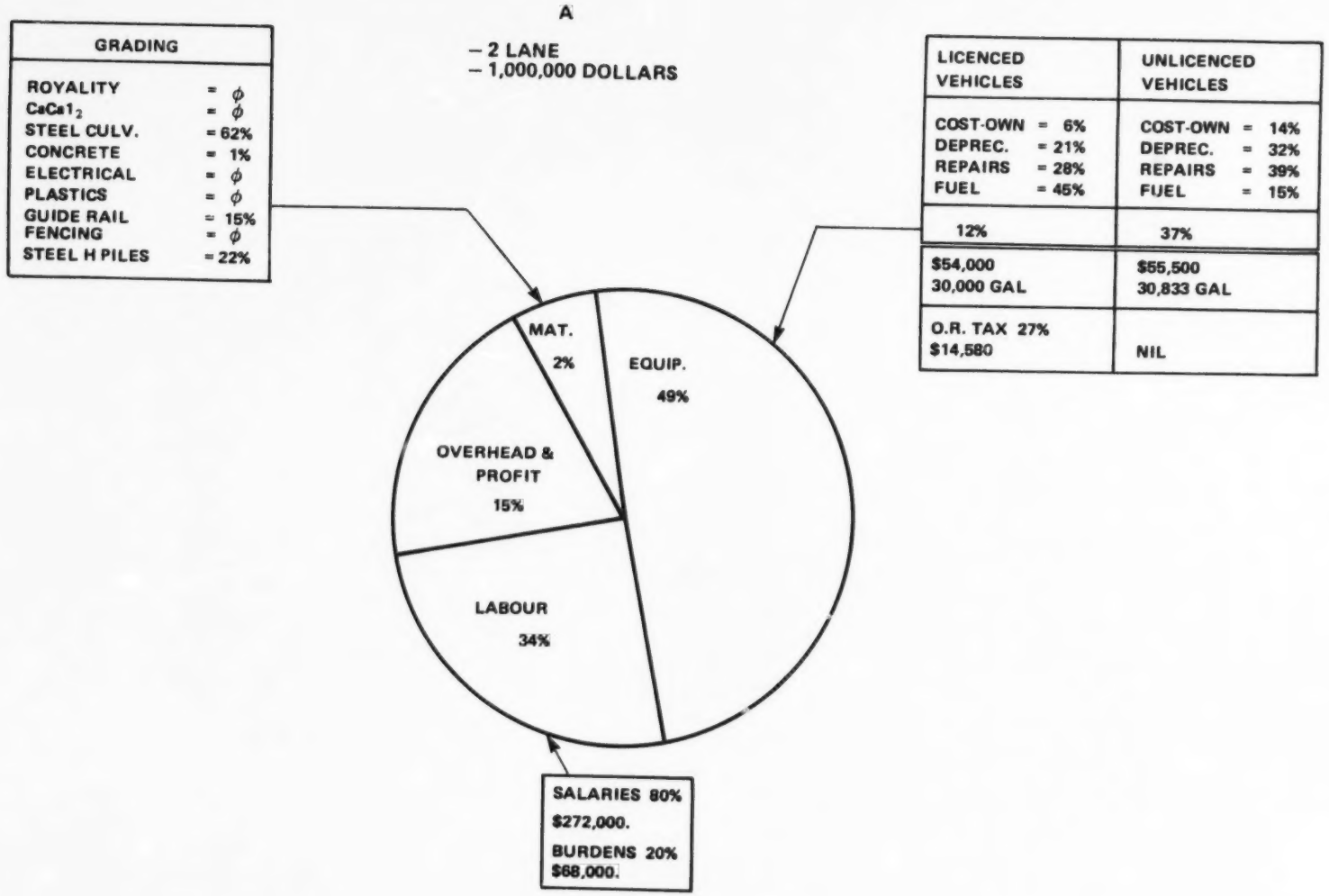


Figure 2/ New Construction -- Unpaved

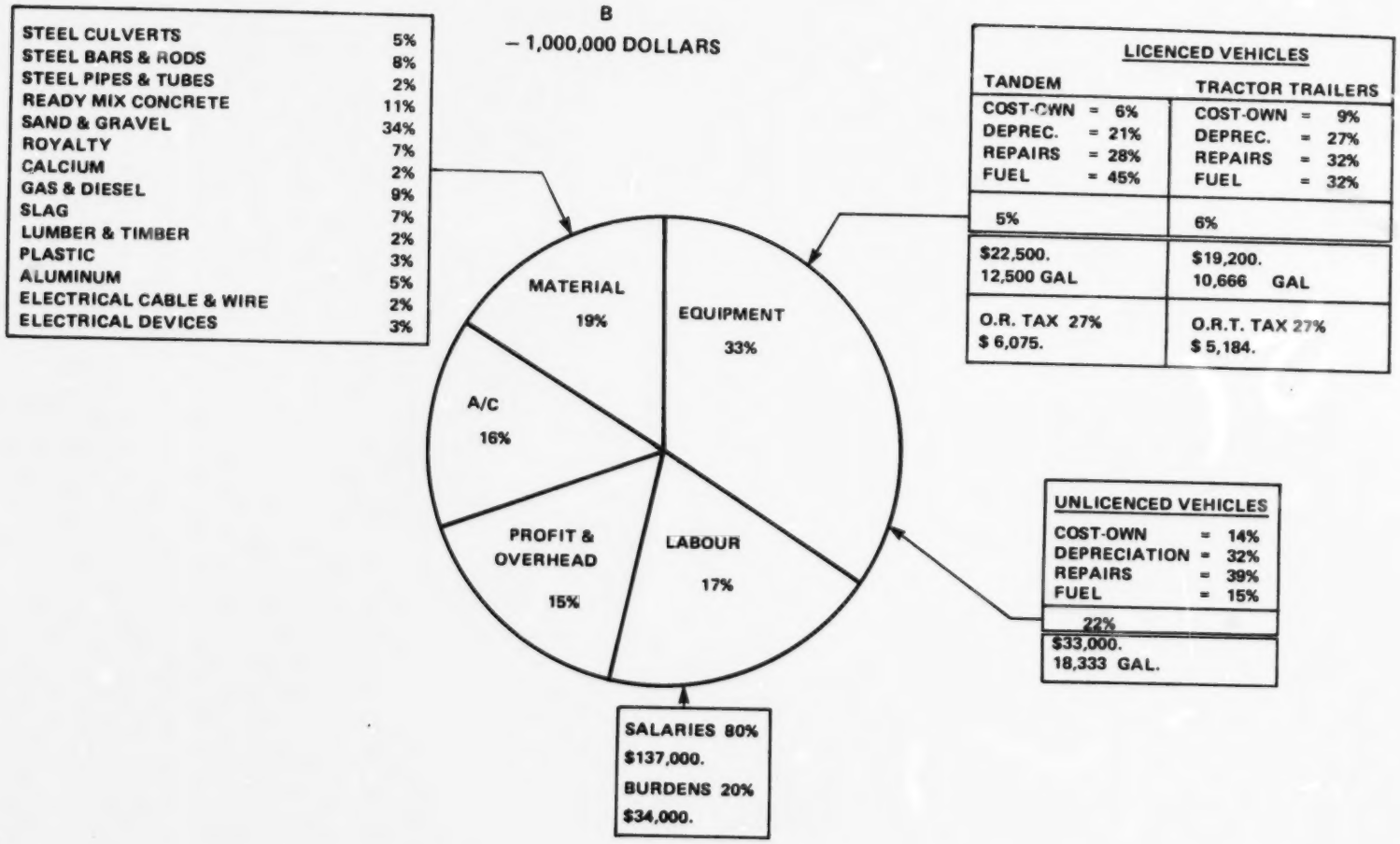


Figure 3/ Multi-lane New Construction (No Structures)

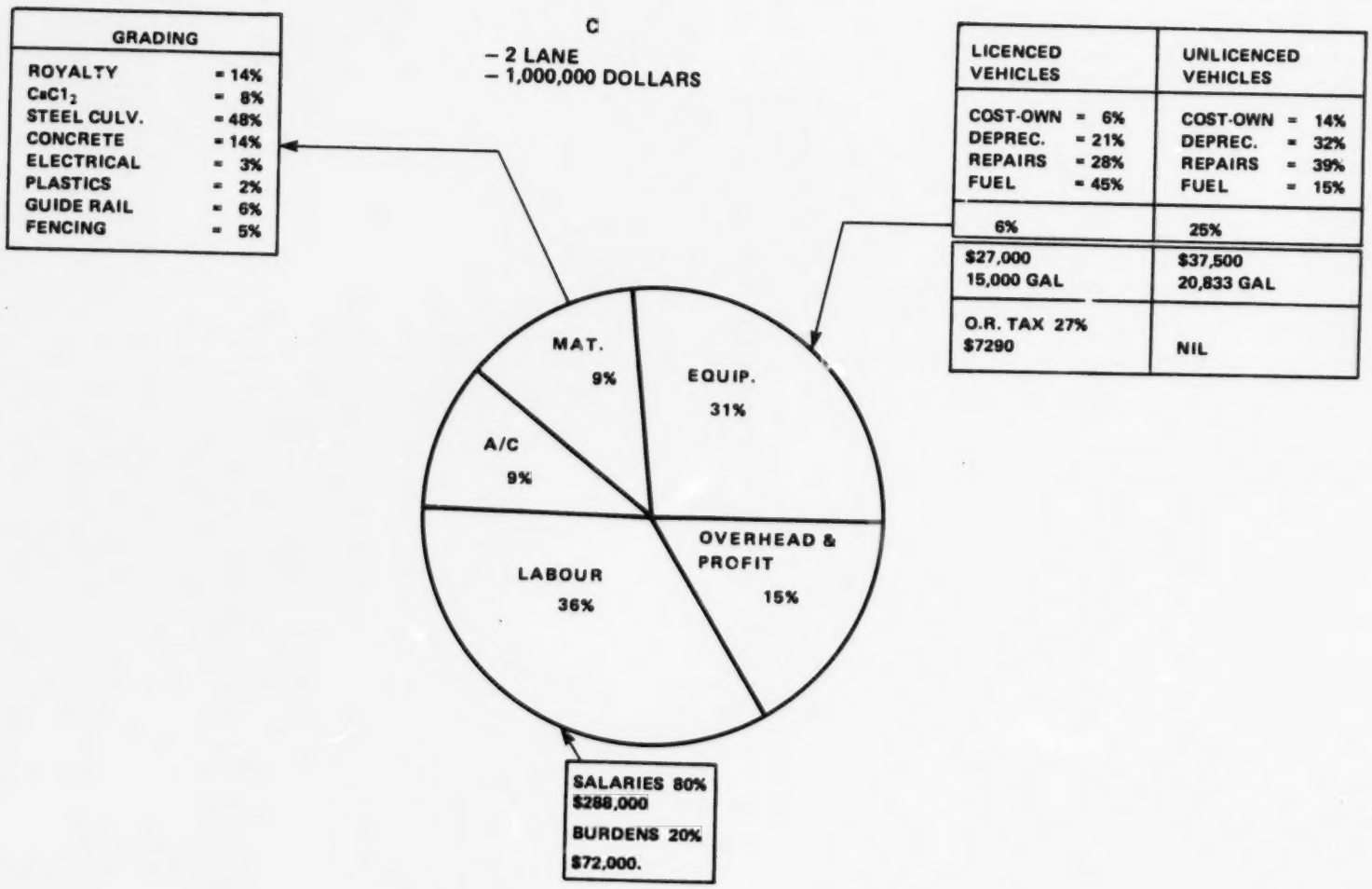


Figure 4/ Reconstruction Paved

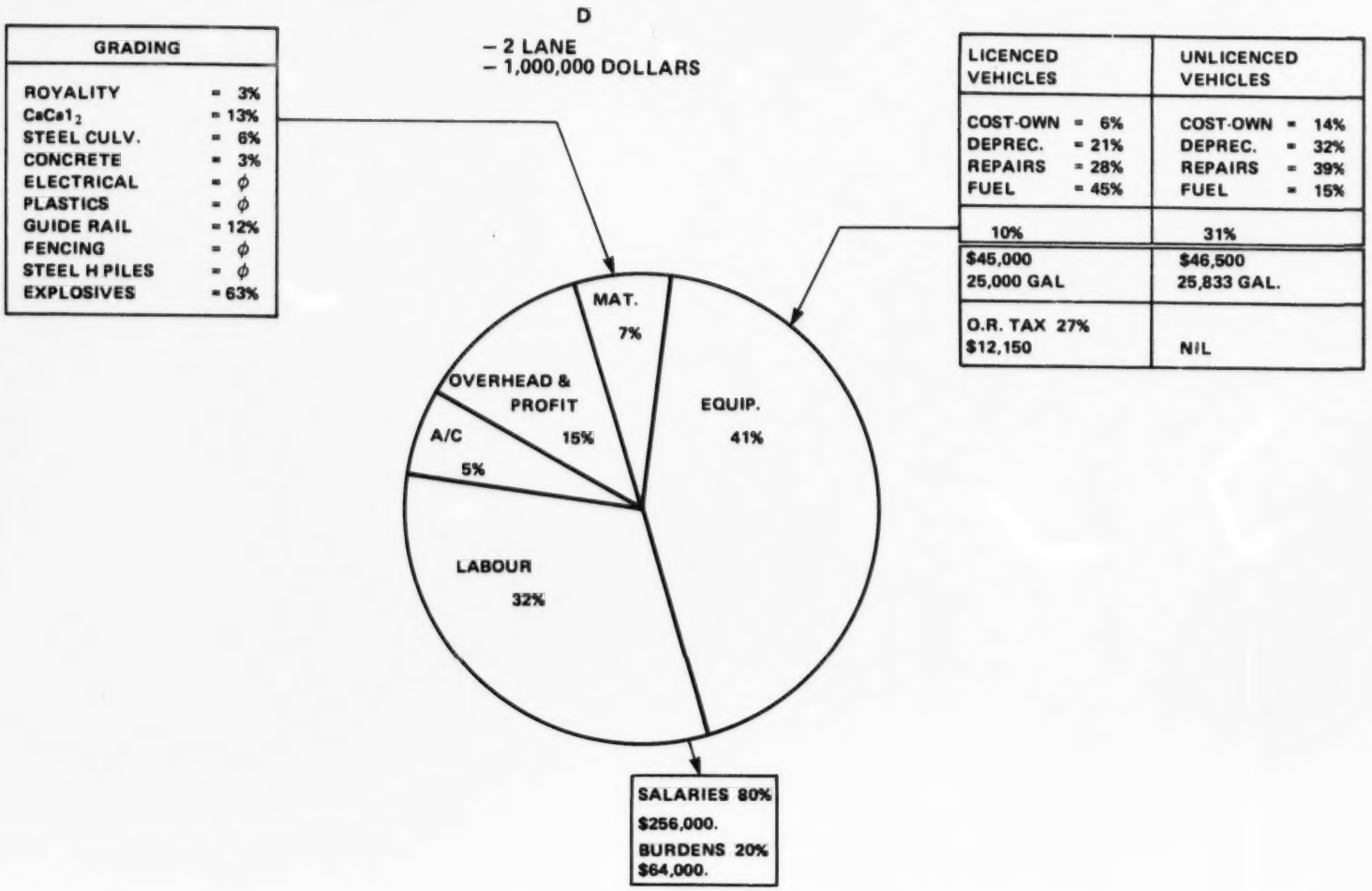


Figure 5/ Reconstruction -- Recycled (with rock)

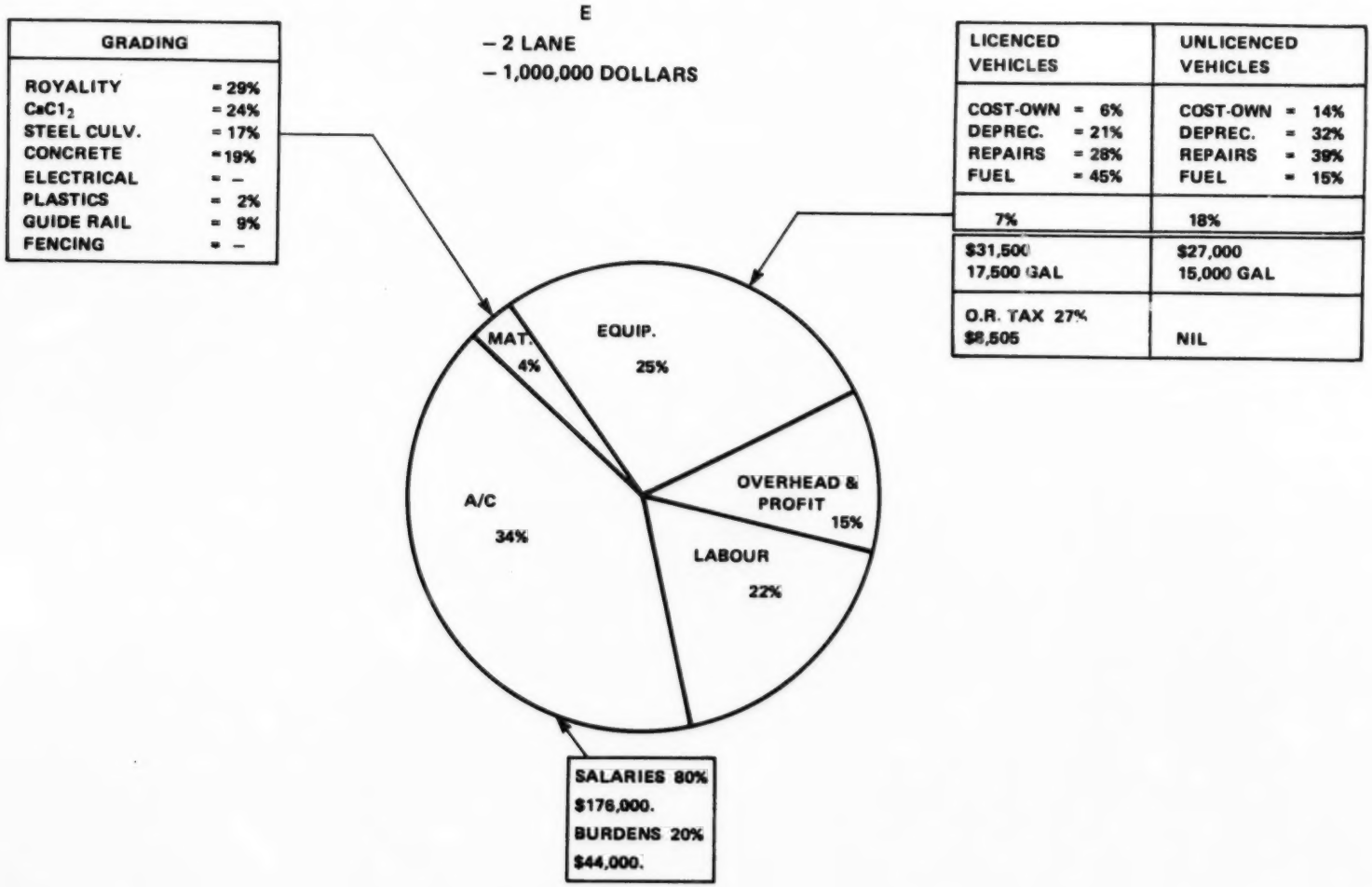


Figure 6/ Resurfacing

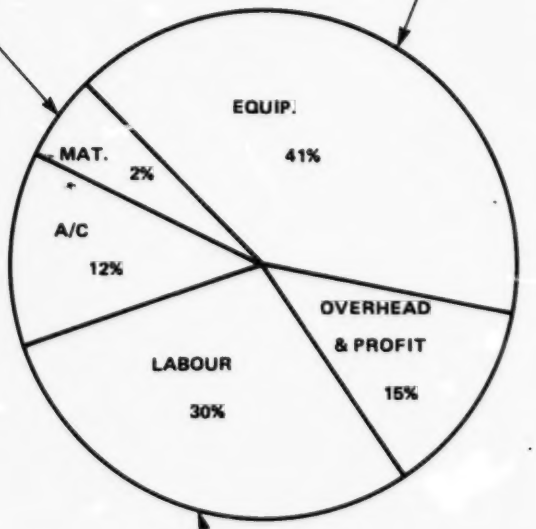
F

– 2 LANE

– 1,000,000 DOLLARS

GRADING	
ROYALITY	= 17%
$CaCl_2$	= 30%
STEEL CULV.	= 35%
CONCRETE	= 4%
ELECTRICAL	= –
PLASTICS	= 7%
GUIDE RAIL	= 7%
FENCING	= –

LICENCED VEHICLES	UNLICENCED VEHICLES
COST-OWN = 6% DEPREC. = 21% REPAIRS = 28% FUEL = 45%	COST-OWN = 14% DEPREC. = 32% REPAIRS = 39% FUEL = 15%
10%	31%
$45,000 25,000 GAL	$46,500 25,833 GAL
O.R. TAX 27% $12,150	NIL



SALARIES 80%
$240,000.
BURDENS 20%
$60,000.

Figure 7/ Recycled Hot-Mix

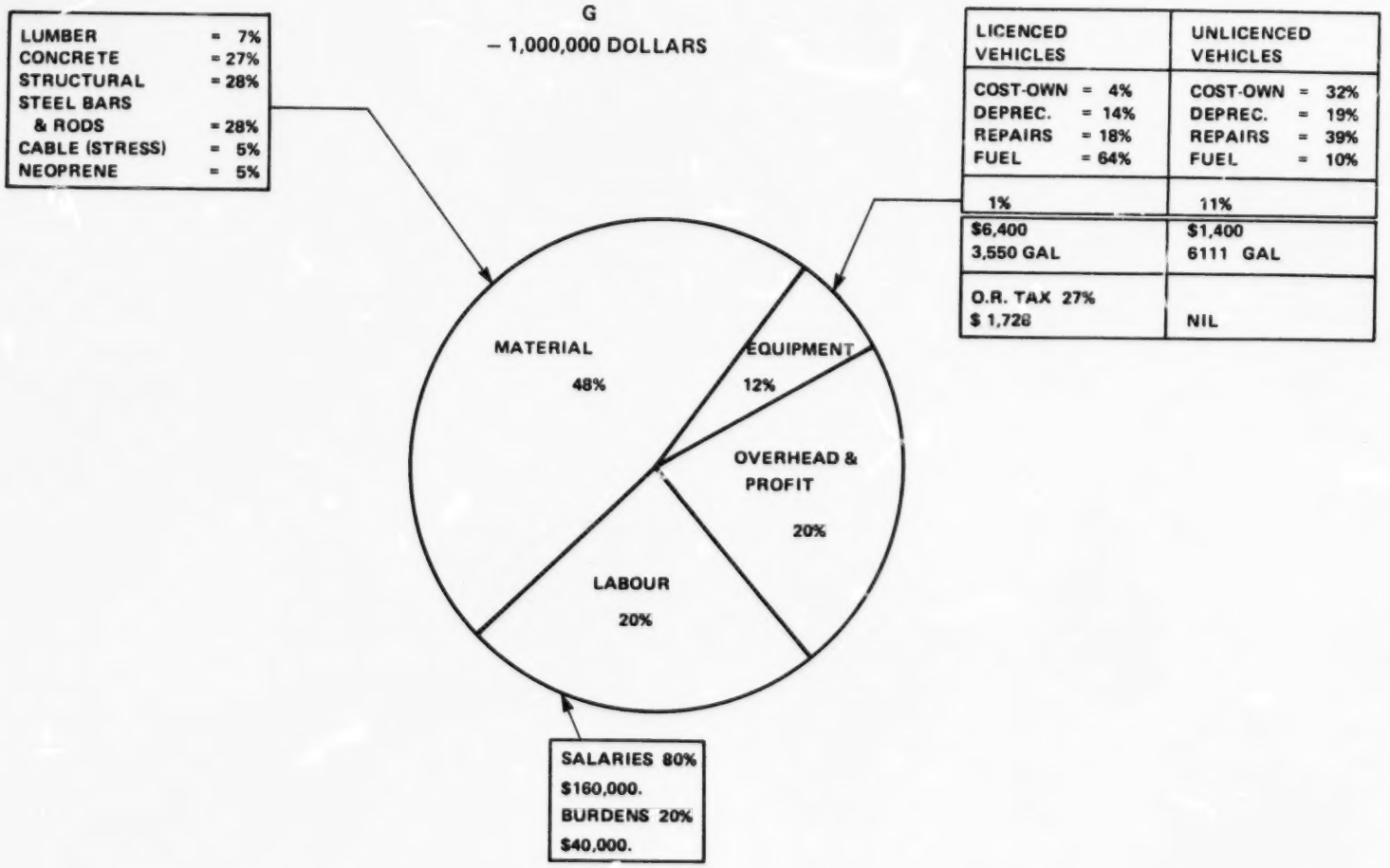


Figure 8/ Post-Tensioned Concrete Structure

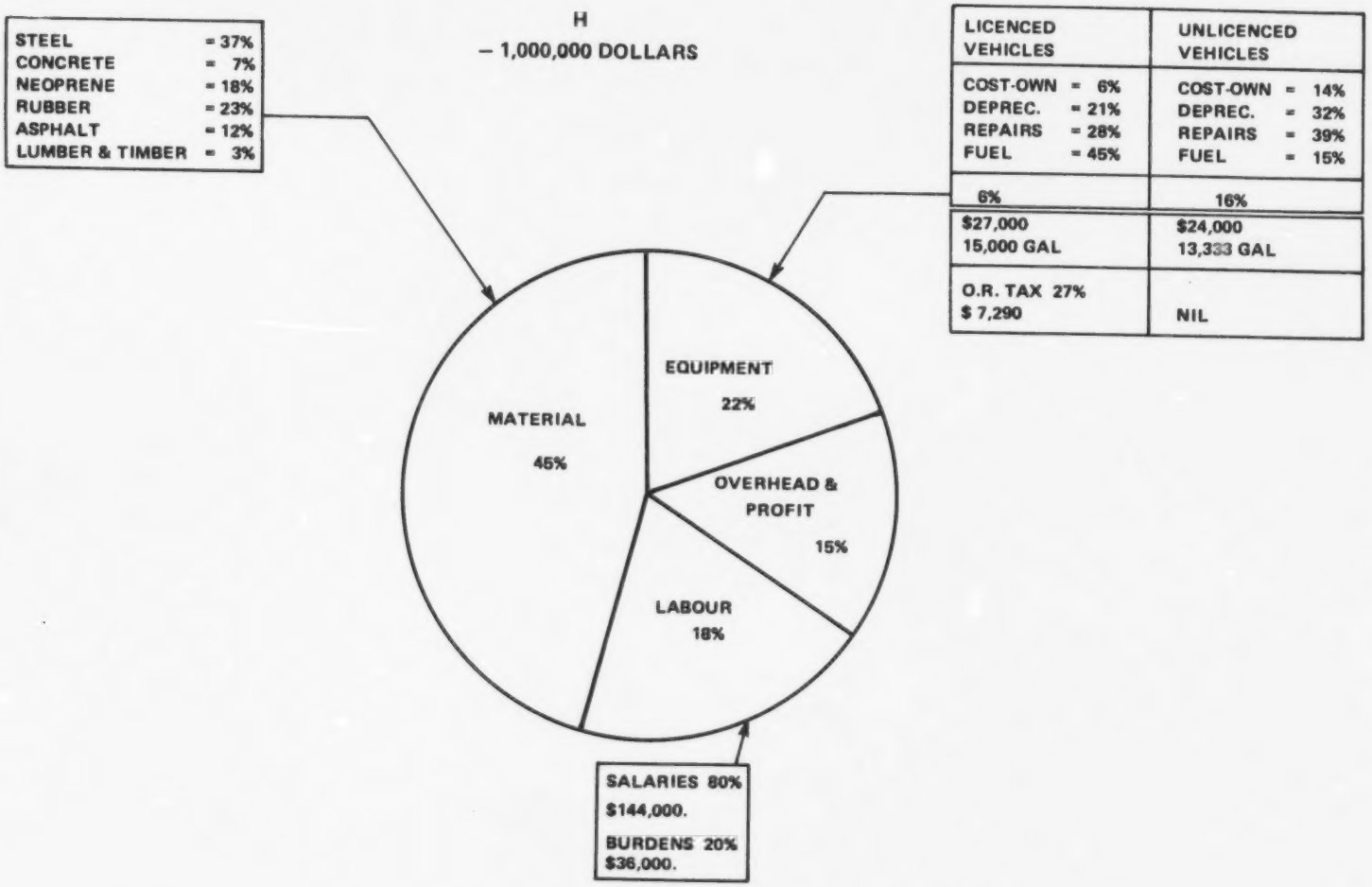


Figure 9/ Bridge Deck Latex-Modified Concrete Overlay

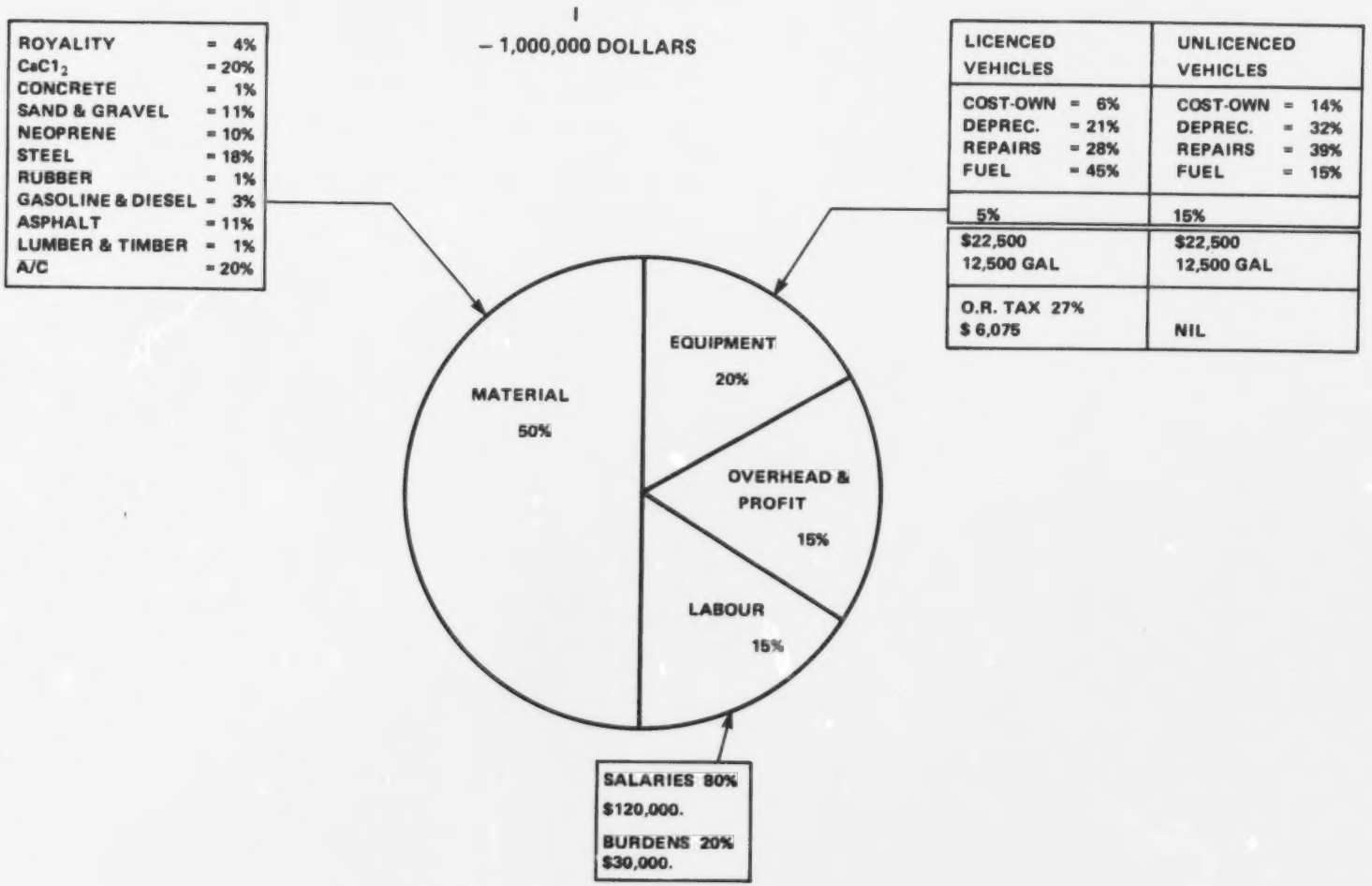


Figure 10/ Bridge Deck Repairs (Latex Patching and Asphalt Overlay)

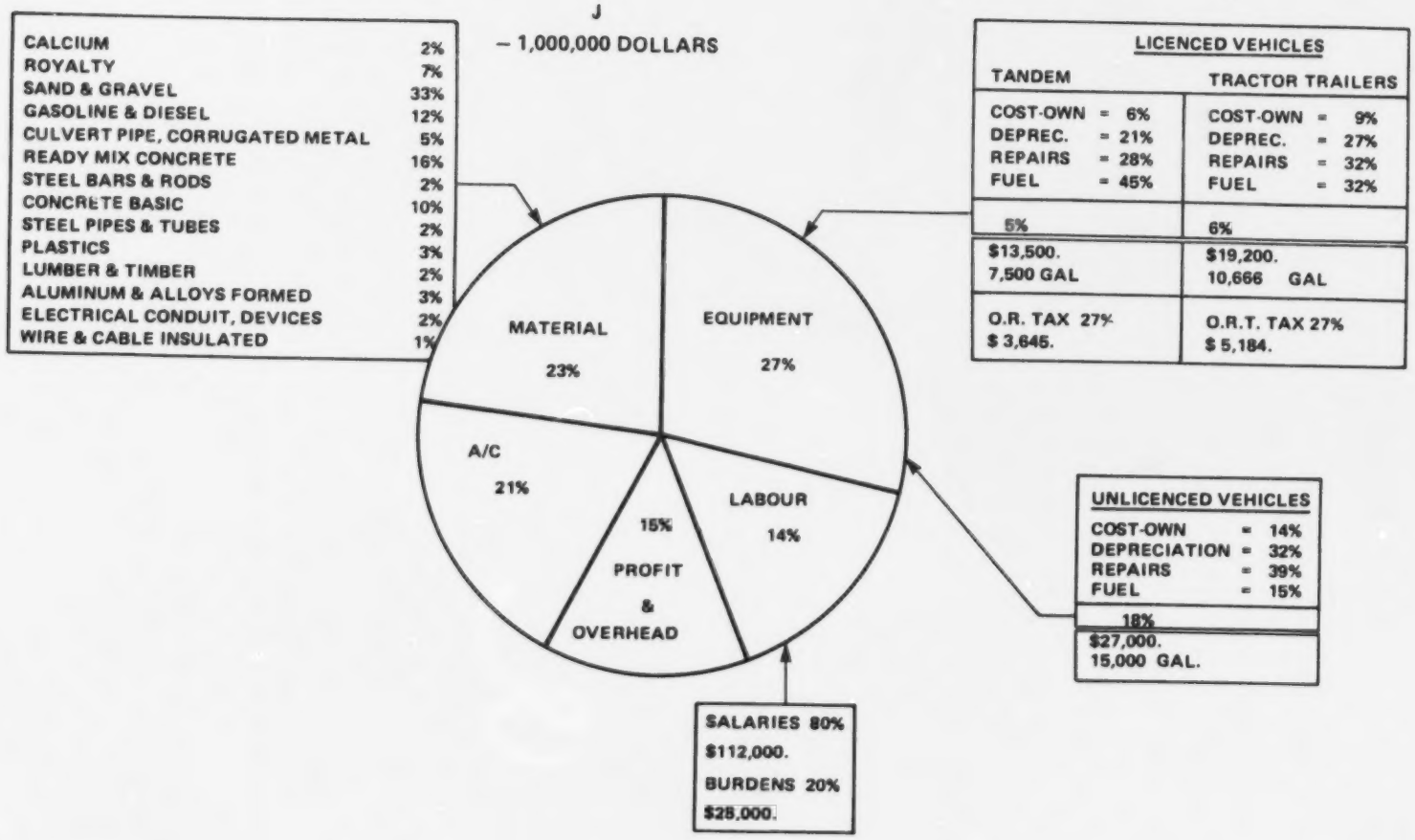


Figure 11/ Major Widening (No Structures)

APPENDIX B/ TABLES OF INDICATORS SHOWING ECONOMIC IMPACTS

Table 2/ Employment Summary Per $1 000 000 Spending in 1982 (Person-Years)

Work Type	Direct Annual Jobs*	Indirect Annual Jobs		Induced Annual		Project Supervision Annual Jobs
	Ontario	Ontario	Other Prov.**	Ontario	Other Prov.	Ontario
A New Construction Unpaved	10.0	3.5	.4	6.9	1.7	4.6
B Multi-lane New Construction	5.4	6.2	1.3	5.5	1.4	4.6
C Reconstruction Paved	9.8	4.2	.7	7.0	1.8	5.0
C Reconstruction Recycled (with Rock)	9.3	3.7	.6	6.6	1.7	5.0
E Resurfacing	6.2	5.2	1.5	5.5	1.4	3.0
F Recycled Hot Mix	8.8	4.1	.8	6.4	1.6	3.0
G Post-Tensioned Concrete Structure	4.7	8.2	1.0	6.2	1.6	5.0
H Bridge Deck Latex Concrete Overlay	4.6	8.7	1.1	6.1	1.6	5.7
I Bridge Deck Repairs	3.9	7.4	1.4	5.4	1.4	5.7
J Major Widening	4.4	7.4	1.4	5.4	1.4	4.6

*The wide variation in direct jobs per million dollars is due to variation in the proportion of MTC supplied material and the total share of material (see diagrams in Appendix A).

**In purchasing materials in Ontario, some of the parts and raw materials come from other provinces, thereby creating jobs in those other provinces.

Table 3/ Foreign Import* Summary Per $1 000 000 Spending in 1982

	Work Type	Indirect Trading		Induced Trading	
		Ontario	Other Prov.	Ontario	Other Prov.
A	New Construction Unpaved	$ 26 000	$ 4 000	$70 000	$20 000
B	Multi-lane New Construction	50 000	10 000	56 000	15 000
C	Reconstruction Paved	35 000	6 000	71 000	20 000
D	Reconstruction Recycled (with Rock)	36 000	6 000	66 000	20 000
E	Resurfacing	42 000	10 000	56 000	15 000
F	Recycling Hot-Mix	31 000	5 000	65 000	19 000
G	Post-Tensioned Concrete Structure	91 000	11 000	62 000	19 000
H	Bridge Deck Latex Concrete Overlay	108 000	11 000	62 000	18 000
I	Bridge Deck Repairs	80 000	12 000	55 000	15 000
J	Major Widening	54 000	11 000	55 000	15 000

*Since the Model produces Figures based on the 1974 exchange rate, the above figures have been adjusted to reflect the current value of the Canadian dollar. Import demand elasticity is arbitrarily assumed to be equal to one.

Table 4/ Ontario Tax Revenues Per $1 000 000 Spending in 1982
(In Thousands of Dollars)

	WORK TYPE	FROM DIRECT INCOME		FROM INDIRECT INCOME		FROM INDUCED INCOME			TOTALS
		BUSINESS*	PERSONAL	BUSINESS	PERSONAL**	BUSINESS	TAXES	PERSONAL	
A	New Construction Unpaved	$ 2.4	$ 13.6	$ .8	$ 3.5	$ 2.9	$ 3.6	$ 6.9	$ 33.7
B	Multi-lane New Construction	2.0	6.8	1.8	6.2	2.3	2.9	5.5	27.5
C	Reconstruction Paved	2.2	14.4	1.1	4.5	3.0	3.7	7.0	35.9
D	Reconstruction Recycled (with Rock)	2.3	12.8	1.0	3.7	2.8	3.4	6.6	32.6
E	Resurfacing	1.6	8.8	1.8	5.2	2.3	2.9	5.5	28.1
F	Recycled Hot-Mix	2.1	12.0	.9	4.1	2.7	3.4	6.4	28.9
G	Post-Tensioned Concrete Structure	2.4	8.0	2.1	8.2	2.6	3.3	6.2	32.8
H	Bridge Deck Latex Concrete Overlay	2.4	7.2	2.0	8.7	2.6	3.2	6.1	32.2
I	Bridge Deck Repairs	2.4	6.0	2.1	7.4	2.1	2.9	5.5	28.4
J	Major Widening	1.9	5.6	2.1	7.4	2.3	2.8	5.4	27.5

*Business income taxes based on calculations from Stat. Canada 61-207 (1979) and 61-208 (1979).

**Taxable Income based on average manufacturing wages of $20 000 gross. Effective tax rate of 5 % based on Stat. Canada 72-002, July 1981 and Taxation Statistics, 1979.

APPENDIX C/ EXAMPLES OF ECONOMIC IMPACTS FROM 1982/83 PROGRAM

Table 5/

Sample Application, Job Creator Allocation Impacts

1982 Expenditures: (System Expansion and Rehabilitation)		
Original Allocation	$298 530 000	
Job Creation Allocation	44 000 000	
Total Expenditure	$342 530 000	
Economic Indicators		
Employment -		
Original Employment Generation		6 978 Person-Years
"Job Creation"		1 061 Person-Years
Total Employment Generation		8 039 Person-Years
Foreign Imports -		
Original Foreign Imports	$ 32 100 000	
"Job Creation" Foreign Imports	3 700 000	
Total Foreign Imports	$ 35 800 000	
Tax Revenue -		
Original Ontario Tax Revenue	$ 9 600 000	
"Job Creation" Tax Revenue	1 300 000	
Total Ontario Tax Revenue	$ 10 900 000	

Table 6/ 1982 Expenditures -- Breakdown of Ontario Economic Indicators

(Figures in parentheses are net of "Job Creation" allocation)

	MTC		MNA				
	MTC System Expan.	MTC System Rehab.	Northern Roads System Expan.	Northern Roads System Rehab.	RPB System Expan.	RPB System Rehab.	Provincial Total
Expenditure	$98.09 M ($92.50 M)	$143.43 M ($125.16 M)	$23.04 M ($20.26 M)	$49.03 M ($38.71 M)	$18.83 M (11.79 M)	$10.11 M ($10.11 M	$342.53 M ($298.53 M)
Direct Private Sector Jobs in Person-Years	654 (609)	1 136 (979)	199 (177)	394 (308)	183 (117)	94 (94)	2660 (2284)
Indirect Private Sector Jobs in Person-Years	589 (563)	707 (609)	107 (93)	234 (181)	70 (42)	44 (44)	1760 (1532)
Induced Private Sector Jobs in Person-Years	603 (568)	906 (782)	159 (119)	309 (241)	129 (81)	69 (69)	2175 (1860)
MTC Supervision Jobs in Person-Years	490 (462)	532 (498)	107 (94)	180 (146)	87 (54)	48 (48)	1444 (1302)
Total Employment Generated in Person-Years	2 345 (2 202)	3 281 (2 868)	572 (483)	1 117 (876)	469 (294)	255 (255)	8039 (6978)
Indirect and Induced Ontario Foreign Imports	$10.9 M ($10.5 M)	$ 14.9 M ($ 13.2 M)	$ 2.4 M ($ 2.1 M)	$ 4.7 M ($ 4.0 M)	$ 1.8 M ($ 1.1 M)	$ 1.1 M ($ 1.1 M)	$35.8 M ($32.1 M)
Ontario Tax Revenue (Rough Estimate)	$ 2.9 M ($ 2.8 M)	$ 4.7 M ($ 4.1 M)	$ 0.8 M ($ 0.7 M)	$ 1.6 M ($ 1.3 M)	$ 0.6 M ($ 0.4 M)	$ 0.3 M ($ 0.3 M)	$10.9 M ($9.6 M)

Table 7/ 1982 Expenditures, $98 090 000 in MTC System Expansion

Direct and Indirect
Private Sector Employment (Person-Years)

In Ontario			Subtotals	
Direct Jobs:	Road Construction		654	
Indirect Jobs:	Mineral Products	41		
	Electrical Products	54		
	Petroleum Products	27		
	Primary Metal Industries	52		
	Metal Fab. Industries	34		
	Rail Transport	16		
	Truck Transport	19		
	Wholesale Trade	108		
	Other Industries	238		
			589	
Induced Jobs:			603	
			1846	Person-Years

Canada Outside Ontario					
Indirect Jobs:	Quebec	51	Person-Years		
	Alberta	25	Person-Years		
	Other	14	Person-Years		
				90	Person-Years
Induced Jobs:	Quebec	76	Person-Years		
	Other	75	Person-Years		
				151	Person-Years
				241	Person-Years
			Grand Total:	2087	Person-Years

Table 8/ 1982 Expenditures, $143 430 000 In MTC System Rehabilitation

Direct and Indirect
Private Sector Employment (Person-Years)

In Ontario			Subtotals	
Direct Jobs:	Road Construction		1 136	
Indirect Jobs:	Mineral Products	13		
	Electrical Products	65		
	Petroleum Products	70		
	Primary Metal Industries	34		
	Metal Fab. Industries	49		
	Rail Transport	17		
	Truck Transport	17		
	Wholesale Trade	130		
	Other Industries	312		
			707	
Induced Jobs:			906	
			2749	Person-Years
Canada Outside Ontario				
Indirect Private Sector Jobs:	Quebec	58		
	Alberta	63		
	Other	29		
			150	Person-Years
Induced Private Sector Jobs:	Quebec	169		
	Other	58		
			227	Person-Years
		Subtotal:	377	Person-Years
		Grand Total:	3126	Person-Years

Table 9/ Example of Computer Printout

PROJECT: MAJOR WIDENING - $1 000 000 (58% MATERIALS) - NO STRUCTURES
OPEN MODEL
TOTAL ENDOGENOUS EMPLOYMENT IN PERSONYEARS (PAID EMPLOYEES)

	NFLD	PEI	NS	NB	QUE	ONT	MAN	SASK	ALTA	BC	Y+NWT	CANADA
1 AGRICULTURE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 FORESTRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 FISHING,HUNTING & TRAPPING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 METAL MINES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 MINERAL FUELS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 NON-METAL MINES & QUARRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 SERVICES INCIDENTAL TO MINING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2
8 FOOD & BEVERAGE INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.6
9 TOBACCO PRODUCTS INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 RUBBER & PLASTICS PRODUCTS IND.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 LEATHER INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
12 TEXTILE INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 KNITTING MILLS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 CLOTHING INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 WOOD INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.6
16 FURNITURE & FIXTURE INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 PAPER & ALLIED INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
18 PRINTING & PUBLISHING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19 PRIMARY METAL INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 METAL FABRICATING INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
21 MACHINERY INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.4
22 TRANSPORTATION EQUIPMENT IND.	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3
23 ELECTRICAL PRODUCTS INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
24 NON-METALLIC MINERAL PROD. IND.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 PETROLEUM & COAL PRODUCTS IND.	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.5
26 CHEMICAL & CHEMICAL PROD. IND.	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.6
27 MISC MANUFACTURING INDUSTRIES	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4
28 CONSTRUCTION INDUSTRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29 TRANSPORTATION & STORAGE	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0	0.1	0.0	0.0	4.6
30 COMMUNICATION	0.0	0.0	0.0	0.0	0.2	0.7	0.0	0.0	0.0	0.0	0.0	0.9
31 ELEC POWER,GAS,OTHER UTILITIES	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
32 WHOLESALE TRADE	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
33 RETAIL TRADE	0.0	0.0	0.0	0.0	0.1	1.3	0.0	0.0	0.0	0.0	0.0	1.5
34 OWNER OCCUPIED DWELLINGS	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.6
35 OTHER FINANCE,INS. & REAL ESTATE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36 EDUCATION & HEALTH SERVICES	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3
37 AMUSEMENT & RECREATION SERVICES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38 SERVICES TO BUSINESS MANAGEMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39 ACCOMMODATION & FOOD SERVICES	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.1	0.0	0.0	0.6
40 OTHER PERSONAL & MISC SERVICES	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
41 TRANSPORTATION MARGINS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42 OPERATING,OFFICE,LAB & FOOD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43 TRAVEL & ADVERTISING,PROMOTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	0.0	0.0	0.0	0.0	0.7	11.8	0.1	0.1	0.5	0.1	0.0	13.2